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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/772,325	01/29/2001	Atsushi Dohi	7055155554	8692
21874	7590	11/18/2003	EXAMINER	
EDWARDS & ANGELL, LLP P.O. BOX 9169 BOSTON, MA 02209			STOCK JR, GORDON J	
		ART UNIT	PAPER NUMBER	
		2877		

DATE MAILED: 11/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	09/772,325	DOHI, ATSUSHI
	Examiner	Art Unit
	Gordon J Stock	2877

-- The MAILING DATE of this communication app ars on th c v rshe t with the correspond nc address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on 10 September 2003.
- 2a) This action is **FINAL**.      2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) 26 and 34 is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 19, 27, and 33 is/are rejected.
- 7) Claim(s) 1-18, 20-25, and 28-32 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 29 January 2001 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) All    b) Some \*    c) None of:  
1. Certified copies of the priority documents have been received.  
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

- 13) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) The translation of the foreign language provisional application has been received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_.

## DETAILED ACTION

### *Drawings*

1. After further consideration, the drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the light-receiving means for receiving said reflected light transmitted through said second polarizing means of claim 10 (Examiner suggests having the light path **9** extend to **4** in Fig. 1); and the embodiment of claims 27-33 comprising a monochromatic light source, the light receiving means, and a rotational light-receiving means must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### *Specification*

2. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: of claims 4 and 13, the limitation of  $\beta/\pi$  is  $n + \frac{1}{2}$  lacks antecedent basis, for the specification on page 20 shows  $\beta/\pi$  being either  $n$  or  $n/2$  (lines 18 and 20). And in claim 27 “a rotational light-receiving means” lacks antecedent basis that appears to refer to lines 30-32 of page 32 and the limitation of light-receiving means lacks antecedent basis because the specification of pages 32-33 dispense with a spectroscope, a light-receiving means, and therefore the spectroscope slit when a monochromatic light source is used. As for claim 19, the limitation of rotational light-receiving step lacks antecedent basis because the specification on pages 32-33

dispense with a spectroscope and therefore a spectroscope slit when a monochromatic light source is used. Corrections required.

In addition, Examiner suggests for clarity that equation 2 read  $\beta = \Theta \cdot (1 + \alpha^2)^{1/2}$  in claims 4 and 13 and on page 6 line 18 and page 8 line 27 of the specification.

Since the disclosure appears to be a literal translation of a foreign document, Examiner requests that the applicant clarify the record by amending the written description such that it expressly recites what structures and acts perform the functions recited in the claims—wavelength deriving means,  $\Delta n \cdot d$  deriving means, thickness deriving means of claim 10; the steps of claim 19; and for claim 27, the light-receiving means, rotational light-receiving means, angle deriving means,  $\Delta n \cdot d$  deriving means, and thickness deriving means, whereas, a monochromatic source is used and a spectroscope is dispensed.

#### *Claim Objections*

3. **Claim 1** is objected to for the following: on line 3, “birefringnet” should read – birefringent.-- On line 12, “said light-receiving means” lacks antecedent basis. On line 24, “d” is not identified. On line 15, the term “returns” is objected to for it is unclear as to where or from where the light returns. Lastly, Examiner suggests that on line 16, “said entering,” be --said light entering--. Corrections required.

4. **Claim 7** is objected to for the following: on line 2, “the transmission axis” lacks antecedent basis. Correction is required.

5. **Claim 9** is objected to for the following: due to claim 1’s objection above, “said light receiving means” also lacks antecedent basis. Correction is required.

6. **Claim 10** is objected to for the following: on line 13, “said entering” lacks antecedent basis; on line 19, “said liquid crystal layer” lacks antecedent basis; and  $\Delta n \cdot d$ ,  $d$ , and  $\Delta n$  are not defined/identified. On line 12, the term “returns” is objected to for it is unclear as to where or from where the light returns. Corrections required.

7. **Claim 12** is objected to for the following: “matrix is used in” should read --matrix is used by--. Correction is required.

8. **Claim 13** is objected to for the following: the equation for  $\alpha$  (equation 1) is incorrect. Correction is required.

9. **Claim 16** is objected to for the following: “the transmission axis” of line 2 and from claim 10’s objection above “said liquid crystal layer” of line 3 lack antecedent basis. Corrections required.

10. **Claim 17** is objected to for the following: “said  $\Delta n \cdot d$  deriving step” lacks antecedent basis. Correction is required.

11. **Claim 18** is objected to for the following: “said reflection region” lacks antecedent basis; just as in claim 10 “said entering” lacks antecedent basis. Corrections required.

12. **Claim 19** is objected to for the following: on line 3, “birefringnet” should read – birefringent--. On line 26, “desired wavelength” lacks antecedent basis. On line 19, the term “returns” is objected to for it is unclear as to where or from where the light returns. On line 20, Examiner suggests “said entering” be ---said light entering---. Corrections required.

13. **Claim 20** is objected to for the following: “said reflected light intensity” lacks antecedent basis. Correction is required.

14. **Claim 25** is objected to for the following: “said light-receiving means” and “said entering” lack antecedent basis. Correction is required.
15. **Claim 27** is objected to for the following: “said entering” of line 18 lacks antecedent basis; on line 18, the term “returns” is objected to for it is unclear as to where or from where the light returns. And  $\Delta n \cdot d$ ,  $d$ , and  $\Delta n$  are not defined/identified. Corrections are required.
16. **Claim 28** is objected to for the following: “said reflected light intensity” lacks antecedent basis. Correction is required.
17. **Claim 29** is objected to for the following: “matrix is used in” should read --matrix is used by--. Correction is required.
18. **Claim 33** is objected to for the following: just as claim 27, “said entering” lacks antecedent basis. And “said liquid crystal device” lacks antecedent basis.

*Claim Rejections - 35 USC § 112*

19. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
20. **Claims 19, 27, and 33** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

**Claim 19** is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. There appears to be a step missing between the light-receiving step and the rotational light-receiving step to connect the two or it appears that the rotational light-receiving should be within the substeps of the light receiving step for a proper sequence of steps. In addition, the

specification on pages 32-33 demonstrates that a step involving the rotation of the stage should be included. In addition, the phrase, "engaging with said light receiving step" is indefinite, for it is unclear as to how the rotational light receiving step engages with said light receiving step to keep respective transmission axes constant.

**Claim 27** is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: the rotary stage which from the specification on pages 32-33 appears to be necessary in combination with the rotational light-receiving means, the slit. In addition, the phrase, "engaging with said light receiving means" is indefinite, for it is unclear as to how the rotational light receiving means engages with said light receiving means to keep respective transmission axes constant.

As for **claim 33**, the term, "reflection type" renders the claim(s) indefinite because the claim(s) include(s) elements not actually disclosed (those encompassed by "type"), thereby rendering the scope of the claim(s) unascertainable. See MPEP § 2173.05(d).

#### *Response to Arguments*

21. Applicant's arguments, see Remarks pages 12-15, filed September 10, 2003, with respect to the rejection(s) of claim(s) 1-3, 7, 10-12, and 16 under 35 U.S.C. 102(a) and claims 4-6 and 13-15 are rejected under 35 U.S.C. 103(a) have been fully considered and are persuasive. Specifically, on page 13 lines 16-23 of the Remarks the argument concerning the polarizers being orthogonal for claims 6 and 15 are persuasive. And the use of a known birefringent and known wavelength combination in claims 1 and 10 is a persuasive argument, by showing that Kwok solely demonstrates the use of known twist angle and known birefringent independent of

wavelength and finds a null wavelength and subsequently, determines cell gap (page 14 of Remarks). Therefore, the rejections have been withdrawn. However, upon further consideration, a new ground(s) of rejection is made under 35 U.S.C. 112 second. (see **claims 19, 27 and 33** above).

*Allowable Subject Matter*

22. **Claims 1-18** would be allowable if rewritten to overcome the objections from above. In addition, **claims 2-6, 8, 11, 14-15** have been objected to for being dependent upon objected claims.

As to **claim 1**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in a method of measuring a thickness  $d$  of a liquid crystal layer a thickness deriving step of finding  $d$  by assigning a known combination of wavelength and birefringent index to a relation, in combination with the rest of the limitations of **claims 1-9**.

As to **claim 10**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in a device for measuring a thickness a thickness deriving means for finding a thickness by assigning a known combination of wavelength and birefringent index to a relation, in combination with the rest of the limitations of **claims 10-18**.

23. **Claims 19 and 27** would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, and any objections as set forth in this Office action.

24. **Claims 20-25, and 28-33** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the

base claim and any intervening claims and rewritten to overcome any objections. And **claim 33** must be rewritten to overcome the 35 U.S.C. second paragraph rejection above.

25. As to **claim 19**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in a method of measuring a thickness *d* of a liquid crystal layer the particular light receiving step, in combination with the rest of the limitations of **claims 19-25**.

26. As to **claim 27**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in a device for measuring a thickness *a* monochromatic light source, in combination with the rest of the limitations of **claims 27-33**.

#### ***Fax/Telephone Numbers***

If the applicant wishes to send a fax dealing with either a proposed amendment or a discussion with a phone interview, then the fax should:

- 1) Contain either a statement "DRAFT" or "PROPOSED AMENDMENT" on the fax cover sheet; and
- 2) Should be unsigned by the attorney or agent.

This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

*Papers related to the application may be submitted to Group 2800 by Fax transmission. Papers should be faxed to Group 2800 via the PTO Fax machine located in Crystal Plaza 4. The form of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Machine number is: (703) 872-9306*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gordon J. Stock whose telephone number is (703) 305-4787. The examiner can normally be reached on Monday-Friday, 10:00 a.m. - 6:30 p.m.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

gs

November 7, 2003



Zandra V. Smith  
Primary Examiner  
Art Unit 2877